



American Association for Cancer Research

FINDING CURES TOGETHERSM

Embargoed for Release: 12:05 a.m. ET, Sept. 1, 2017

To interview Cornelia Ulrich, contact Julia Gunther at julia.gunther@aacr.org or 215-446-6896. For a photo of Ulrich, click [here](#). Visit our [newsroom](#).

Adipose Tissue May Affect Cancer Development in Multiple Ways *Review indicates need to further explore relationship between fat and cancer*

PHILADELPHIA — Adipose tissue, or fat, may influence the development of cancer in diverse ways, depending on the type of fat and the location in the body, according to results of a systematic review published in [Cancer Prevention Research](#), a journal of the [American Association for Cancer Research](#).

The relationship between fat and carcinogenesis depends upon “crosstalk,” or the ways cells react when the same signal is shared by more than one signaling pathway in two different cell types, explained the study’s lead author, [Cornelia M. Ulrich, PhD](#), senior director of Population Sciences at the [Huntsman Cancer Institute](#) at the University of Utah in Salt Lake City. Identifying ways to interrupt the crosstalk could help researchers identify new cancer prevention strategies, she added.

“Obesity is increasing dramatically worldwide, and is now also recognized as one of the major risk factors for cancer, with 16 different types of cancer linked to obesity,” Ulrich said. “We urgently need to identify the specific mechanisms that link obesity to cancer.”

Ulrich explained that previous research has shown several ways that fat contributes to carcinogenesis. For example, obesity increases the risk of inflammation, which has long been associated with cancer. Also, obesity is believed to affect cancer cell metabolism and immune clearance, all of which can contribute to the growth and spread of tumors, she said.

In this study, Ulrich and colleagues, including researchers from the University of North Carolina, conducted a literature review of PubMed/Medline, covering publications from January 1946 to March 2017, seeking studies that explored crosstalk between adipose tissues and carcinomas. They ultimately found 20 primary research publications that specifically addressed the topic.

Ulrich said the review provided a deeper look into the mechanisms of carcinogenesis. For example, several studies showed that adipose stromal cells have the power to infiltrate cancer lesions and promote the growth of tumors. These cells were found in greater number in obese prostate cancer and obese breast cancer patients, studies showed.

Ulrich said the review also showed how some types of fat are more “metabolically active,” secreting more substances that led to the growth of cancer. There are three different types of fat: white, brown, and beige; and each acts differently and is present in different amounts depending

on where the fat is located. For example, the review noted, white adipose tissue has been associated with inflammation, and in breast cancer patients, has been associated with worse prognosis.

Ulrich's study analyzed the effects of fat on breast, colorectal, esophageal, endometrial, prostate, and ear-nose-throat cancer, taking into consideration the proximity of adipose tissue relative to the organs. For example, Ulrich explained, in colorectal cancer, adipose tissue is typically located adjacent to tumors, whereas in breast cancer, adipose tissue is part of the direct tumor microenvironment. She said that future research would be useful in evaluating the role of tissue distance in the obesity-cancer connection, and whether there are ways to intercept the processes that fuel tumor growth.

"We are just beginning to unravel the ways crosstalk occurs and the substances involved," Ulrich said. "The more we understand this process, the better we can identify targets and strategies for decreasing the burden of obesity-related cancer." She cited metabolomics, an emerging field of study that analyzes small molecules called metabolites to "cast a broad net that catches previously unknown substances exchanged between fat cells and cancer."

Ulrich added that the study supports the importance of maintaining a healthy body weight. Because fat exists both under the skin and deeper inside the body, even slender people may have excess fat surrounding internal organs. Healthy diets and exercise that includes strength training to build lean muscle mass can help fight the development of excess fat, she said.

Ulrich said the primary limitation of the review is that the link between obesity and cancer is just beginning to be understood; therefore, there was little existing research on the topic.

This study was funded by the National Cancer Institute, Stiftung LebensBlicke; Claussen-Simon-Stiftung, the Ministry of Science, Research and Technology in Iran, and the Huntsman Cancer Foundation. Ulrich declares no conflicts of interest.

###

Follow us: *Cancer Research Catalyst* <http://blog.aacr.org>; Twitter [@AACR](https://twitter.com/AACR); and Facebook <http://www.facebook.com/aacr.org>

For AACR information, visit [Fast Facts](#).

About the American Association for Cancer Research

Founded in 1907, the American Association for Cancer Research (AACR) is the world's first and largest professional organization dedicated to advancing cancer research and its mission to prevent and cure cancer. AACR membership includes more than 37,000 laboratory, translational, and clinical researchers; population scientists; other health care professionals; and patient advocates residing in 108 countries. The AACR marshals the full spectrum of expertise of the cancer community to accelerate progress in the prevention, biology, diagnosis, and treatment of cancer by annually convening more than 30 conferences and educational workshops, the largest of which is the AACR Annual Meeting with more than 21,900 attendees. In addition, the AACR publishes eight prestigious, peer-reviewed scientific journals and a magazine for cancer survivors, patients, and their caregivers. The AACR funds meritorious research

directly as well as in cooperation with numerous cancer organizations. As the Scientific Partner of Stand Up To Cancer, the AACR provides expert peer review, grants administration, and scientific oversight of team science and individual investigator grants in cancer research that have the potential for near-term patient benefit. The AACR actively communicates with legislators and other policymakers about the value of cancer research and related biomedical science in saving lives from cancer. For more information about the AACR, visit www.AACR.org.